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ABSTRACT

This report presents an evaluation of a bilingual education program in which English-speaking children receive most of their school instruction in French. The paper discusses details of the program and curriculum and reports on the tests conducted to evaluate the program. Results are presented of tests examining English and French language skills, arithmetic, intelligence and creativity, sensitivity to foreign sounds, attitudes toward ethnolinguistic groups, and self concept. The program evaluators feel that bilingualism can be most efficiently attained if biculturalism or culture sensitivity is pursued at the same time. At the end of grade 4, the children can read, write, speak, understand, and use French far better than students who follow typical French-as-a-second-language programs. (VM)

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Cognitive and Attitudinal Consequences of Following the Curricula of the First Four Grades in a Second Language

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Abstract

This report presents a critical evaluation of the progress of two classes of English-speaking Canadian children who have been participating in a French-English Bilingual Education program. At the end of Grade IV, the children are able to read, write, speak, understand and use English as well as carefully selected, conventionally educated English Controls. In addition, they can read, write, speak, understand, and use French far better than students who follow typical French as a Second Language programs. The report also describes intellectual and attitudinal consequences of the program.

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Cognitive and Attitudinal Consequences of Following the Curricula of the First Four Grades in a Second Language[1]

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McGill University

This is the fourth report of an experimental program designed to develop bilingual skills among English-speaking children by using a second language, French, as the major medium of instruction. The origins of this program, involving a switch in the languages of home and school, and the methods of evaluating it were described in the first technical report (Lambert and Macnamara, 1969) as well as in a recent non-technical summary (d'Anglejan and Tucker, 1970). The report by Lambert and Macnamara described the results of a systematic program of testing administered to a Pilot Class at the end of Grade I and to two Control Classes, one following a normal English-language first grade program, the other a normal French-language program.

The second report (Lambert, Just and Segalowitz, 1970) followed the Pilot Class through Grade II where two daily 35-minute periods of English Language Arts were added to the program. The test results from both reports showed a regular improvement in French and English language achievement and in

mathematics, so that by the end of Grade II, the Experimental Pilot Class performed as well as, and in certain cases better than, either English of French Control Classes in most of the abilities examined. They were not, however, equivalent to the French Controls in their spontaneous expression in French.

The second report also introduced the results from a second or Follow-up set of the Grade I Experimental and Control Classes which were included in the study to test the reliability and generalizability of the findings from the Pilot Classes. The similarity of results for the Pilot and Follow-up Classes of first-graders, in spite of changes in teachers, methods of instruction and modes of testing and analysis, was striking.

The third report (Lambert, Tucker, d'Anglejan and Segalowitz, 1970) examined the Pilot Class at the end of Grade III and the Follow-up Class at the end of Grade II. It also compared the Experimental Classes on standardized achievement tests developed for use with monolingually instructed French children in Montreal's French school system. As well, the third report dealt with the development of the pupils' ethnic attitudes since it was presumed that the mainly French experimental program would affect children's views of the other ethno-linguistic group, going beyond the mere mastering of a second linguistic code. In this regard, the Experimental Classes appeared to be developing a relatively democratic and

non-ethnocentric outlook toward French people and French culture.

The present report summarizes the results of the comparisons made at the end of Grade IV for the Pilot Class and Grade III for the Follow-up Class. Included were measures of native and second language skills, content subject mastery, general intellectual development, and attitudinal profiles of the bilingually instructed pupils compared with those of their monolingually instructed French or English counterparts.

Although diverse innovative approaches to bilingual education have been tried in many settings in recent years, very few have been systematically evaluated or described. We believe that this series of reports will interest the increasing number of administrators and educators who are becoming involved in similar programs (cf., Tucker and d'Anglejan, 1970).

From the beginning, there has been close cooperation between the groups of people involved in this innovative approach to second language teaching -- the teachers, the principal, various school board officials, and, the parents.

General Procedure

During the 1969-70 school year, the Experimental Classes were again located in the St. Lambert Elementary School. At

this time the school contained classes of children in Grades I -IV participating in the experimental program of home-school language switch; conventionally instructed English children in Grades V - VII; and a few classes of monolingual French children. The general bilingual atmosphere of this school had the effect of reducing the experimental overtones of the program.

The Curriculum

The basic curriculum is comparable to that followed by the regular English classes under the school board's jurisdiction. A joint committee of parents and educators helps to formulate curricular policy and select texts. Most textbooks are ones which are widely used in Quebec schools for French children at the equivalent age or grade levels.

The regular daily program of the Pilot and Follow-up Classes was essentially similar. Due mainly to a lack of French-speaking personnel, Music, Art, and Physical Education were taught in English. Each class received formal instruction in English Language Arts. The content subjects such as mathematics, science, and social studies were taught exclusively in French; and, in addition, all classes followed a French Language Arts program. Approximately 60-65% of the curriculum was taught via French with the balance in English.

The Teachers

The Grade IV Pilot Class was taught by a Belgian teacher. She was replaced, because of illness, by a French-speaking North African teacher for the last few months of the year. The Grade III Follow-up Classes were taught by a French Canadian and a Belgian teacher respectively.

The Pupils

From a research point of view, problems are now beginning to arise due to the dwindling number of students in the original Control Classes. The English students being followed for control purposes attend two schools (Margaret Pendlebury and Roslyn) while the French Controls are now dispersed into three separate schools (Rabeau, St-Michel, Sts-Anges). Where possible, we have attempted to assess the pupils' progress using tests in French or English for which city-wide or national norms are available. The number of students in each group was as follows:

Grade III:	Experimental	= 31
	English Control	= 39
	French Control	= 16
Grade IV:	Experimental	= 20
	English Control	= 36
	French Control	= 16

In each of the Experimental Classes, there are now a

few additional children who joined the program after the Kindergarten year. Thus, the Experimental Classes are actually comparable in size to other classes in the school. However, we include in our formal analysis only those children who have participated in the full program.

The Testing Program

The bulk of the testing program was completed during the month of May, 1970. Normally there is less than a one week interval between the administration of any given test to the Experimental and Control groups. In cases where the Experimental children must receive both French and English versions of the same test, one half of the class receives the English version first; the other half, the French. After a two week delay, the second version of the appropriate test is administered.

Two tests, the "Test de Rendement en Français" and the "Test de Rendement en Calcul," were adminstered to the Experimental Classes in November, 1970 to coincide with the administration of these tests by the Commission des Ecoles Catholiques de Montréal (CECM).

The Testers

The majority of the testers were bilingual students who were able to work with both French and English classes; thus assuring comparability of testing conditions. They were

given a brief orientation before the testing began. Most have had experience in test administration for this project from previous years.

Data Analysis

The data were analyzed using the covariance procedure described by Snedecor (1956). Eash of the dependent variables was adjusted for initial differences in nonverbal I.Q. (Raven, 1956), and in home environment characteristics (Bloom, 1964; Dave, 1963; Wolf, 1963). This technique and the covariates which were used have been described in greater detail by Lambert and Macnamara (1969).

Test Battery used with Grades III and IV, 1970

The evaluation covered six separate domains: the measurement of (1) English language skills; (2) French language skills; (3) arithmetic skills; (4) intelligence and creativity; (5) sensitivity to foreign sounds; and (6) attitudes toward selected ethnolinguistic groups, including one's own, and conceptions of self.

1. English Language Skills

English Language Arts. The Metropolitan Achievement Test (1958) served as the basic standardized tool to assess the passive English skills of the Experimental and English Control children. Form A of the Elementary Battery was used with both Grade III and Grade IV children. The test is subdivided into

several parts: Word Knowledge; Word Discrimination; Reading Skills -- comprehension of paragraph-length material; Spelling Skills; Language Usage; and Punctuation and Capitalization. The subtests are described in detail in last year's report.

Listening Comprehension. A group test for Grade III and Grade IV pupils was developed through pilot testing with monolingually schooled English children. It required the children to listen attentively to a tape-recorded passage, concerning icebergs. The passage was read through twice by a native speaker of English. The children were then asked 20 "yes"--"no" questions which tested their understanding and memory for significant details. Total possible score was 20.

English Picture Vocabulary. The Peabody Picture Vocabulary Test, Form A (Dunn, 1959), was administered to all children. For each item, the child matches a word, presented orally, with one of four illustrations presented by slide projector. Items 40-116 from the test were presented to Grade III children for a total possible score of 76. Items 60-136 were presented to Grade IV pupils for a total possible score of 76.

Speaking Skills: Story Invention. Each child was shown a set of comic-strip type pictures, and asked to make up a story suggested by the sequence of pictures. His verbal output was tape-recorded, transcribed to cards, and then

analyzed linguistically (linguistic ratings) and statistically (word counts). Counts were made of the following features of each child's story: the total number of words used in retelling the story, the number of nouns, the number of different nouns, the number of adjectives, the number of different adjectives, the number of verbs, and the number of different verbs.

The linguistic ratings were made by a linguist[2] who listened to a random arrangement of the recordings of both Experimental and Control children. Each child was rated on a five point scale, for each of the following linguistic skills: overall expression, consisting of ease of talking, word choice, thought patterns, and errors of substance; grammatical correctness, enuciation, and rhythm and intonation. The following criteria were used to evaluate the English stories.

For overall expression, a rating of 5 was given only if there were no substantive errors, little or no hesitation, wide vocabulary choice, sophisticated syntax (e.g., the use of subordinators such as although); 4 was used when some hesitation was noted, appropriate but more limited vocabulary, or when the syntax was less elaborate (emphasis on coordination and causal expressions such as then, so). A rating of 3 was assigned when there appeared to be some confusion about substance, some hesitation, a lack of connecting words or a

tendency to use and almost exclusively, and some prompting was necessary. A rating of 2 was used when the story was garbled, the vocabulary was quite limited, there was much hesitation, the interviewer had to provide much encouragement, and the syntax was characterized more by incorrect arrangements than not. A rating of 1 was assigned when the story was essentially incomprehensible, when there was much prompting, much hesitation, a very limited vocabulary, or reluctance on the child's part.

For grammatical correctness a rating of 5 was given only if no errors (including problems with antecedents, lack of parallelism) occurred. The rating of 4 was similar to 5, except that stylistic variation did occur. A rating of 3 indicated that the story was generally correct with one or two errors (strong verb wrong in past tense, pronoun switching). A rating of 2 was used for lack of concord and a generally unstructured story, while 1 indicated virtually no structure.

For enunciation, the rating of 5 indicated relatively strong muscular tension with proper voicing and devoicing. A rating of 4 was assigned when there was less muscular tension and some allophonic variation. The rating 3 was used for understandable mispronunciations, 2 similar to 3 but less understandable and 1 for almost incomprehensible utterances.

For rhythm and intonation the rating of 5 was given only

if the child had appropriate final contours, wide pitch range with beats evenly spaced; 4 was similar to 5 but with less pitch variation; 3 indicated occasional rising final contours used inappropriately; 2 indicated that rising contours were the rule with uneven and uncertain pitch variation; and 1 indicated no final contour.

English Decoding Skill. This group test developed by Samuels, Reynolds and Lambert (1969), measures the children's ability to understand recorded descriptive messages originally formulated either by children of their own age group or by adults. Each child was given a 12 page booklet which contained an array of six abstract designs on each page or six photographs, similar except for subtle differences in lighting or detail. The children listened to a series of 12 tape-recorded descriptions and selected the one photograph or picture which was described by the speaker. Two similar tapes were used, one using children's descriptions, and a second those of adults. The possible score was 12 for the children's descriptions and 12 for the adult's descriptions.

2. French Language Skills

A battery of separate measures was used to assess French competence which are similar to those used to test the various English skills. In all cases where translation equivalents of a particular test were used, one half of the Experimental

Class received the French form first followed by the English form two weeks later while the remainder of the class had the reverse order.

Test de Rendement en Français. The Grades IV and V level of this test prepared yearly by the CECM for use with monolingually instructed French pupils was administered in November, 1970. The tests were given at that time to coincide with the yearly testing by the CECM. The pupils' performance on these tests will be used to indicate the French language proficiency which they had attained by the end of Grades III and IV respectively. The Grade IV level test consisted of seven sections dealing with the recognition of various parts of speech, tenses, appropriate usage, etc. The total possible score was 30.

The Grade V level test[3] consisted of nine sections which also dealt with the recognition of various parts of speech, grammatical analysis, appropriate usage, etc. The total possible score was 35. Although we describe the tests and present the results in this report, it will not be possible to compare the Experimental pupils' performance with the CECM norm until they have completed their data analysis in February, 1971. A separate working paper will be prepared then to report those comparisons.

French Listening Comprehension. This test, designed by

us, was similar to the English Listening Comprehension Test. The children listened to a text about elephants, and then answered 20 "yes" -- "no" questions about the passage.

French Picture Vocabulary. This test consisted of a French adaptation of the Peabody Picture Vocabulary Test (Form B) described above.

French Speaking Skills: Story Invention. Each child was given a series of comic strip pictures, different in content from those used in English story invention, and was asked to make up a story suggested by the sequence. The method of analysis was similar to that for the English story invention. In addition to ratings for overall expression, grammatical correctness, enunciation, and rhythm and intonation, the linguist also evaluated the use of liaison by the children. The word counts were similar to those used in the English analysis.

The following criteria were used to evaluate the French stories. For overall expression, a value of 5 indicated the absence of silences within a sentence, very good fluency and spontaneity, the ability to build coherent sentences, and an appropriately used vocabulary. The rating of 4 indicated a few short silences, some unimportant words left out, while 3 was assigned when some words were used in the wrong position, a few words were missing or when the intervention of the

interviewer was occasionally needed. The rating of 2 indicated many construction errors and many words missing while 1 indicated a total break in sentence construction with no meaning possible.

With respect to grammar, a rating of 5 indicated no grammatical mistakes; 4 signified a few mistakes which would likely escape the notice of an inattentive listener (e.g., wrong auxiliary, wrong article); 3 indicated a few evident mistakes of gender, number, tense etc.; 2 indicated many errors and 1 a total mishandling of French grammar.

For liaison, the rating 5 meant that all obligatory and no forbidden liaisons were made; 4 usually signified 2 or 3 errors; 3 indicated 4 or 5; 2 meant 5 or 6; while 1 signified very poor use of liaison with many forbidden liaisons made as well as obligatory ones not made.

A rating of 5 for rhythm and intonation meant that proper intonation was used for all declarative, interrogative, and exclamatory statements. The rating 4 indicated some instances of rising or lowering intonation at the wrong time with a displacement of accent; 4 was not assigned if there was interference from English. The rating 3 was used for slight deviations similar to 4 which could be attributed to English interference. The rating 2 signified many errors similar to 3; and 1 meant a total break in the intonation contour with

random use of accent.

A 5 rating for enunciation indicated a mastery of what the linguists considered the 36 necessary phonemes without any English interference and without exaggerated French Canadian allophones. The model adopted by the linguist was "standard metropolitan" French. The rating 4 meant that the phonemes were mastered, but with some distortion noted. The rating 3 was used if 1 or 2 sounds were not mastered; 2 when 3-5 were not mastered; while 1 indicated that most of the necessary sounds were not mastered.

Decoding Skills in French. This is a French version of the English test described previously.

3. Arithmetic Skills

Arithmetic competence in English was measured using two subtests at each grade level from the Metropolitan Battery, as well as the "Test de Rendement en Calcul" devised by the CECM.

Metropolitan Achievement Test. This standardized test (1958) has two sections which assess the pupils' arithmetic computation and problem solving skills.

Test de Rendement en Calcul. The Grades IV and V level of this test prepared yearly by the CECM for use with monolingually instructed French pupils was administered together with the Test de Rendement en Français. The Grade IV test

comprised 33 problems; the Grade V, 35. The problems, presented as computational exercises or word problems, involve addition, subtraction, multiplication, division, set theory, basic geometric relationships, etc.

4. Intelligence and Creativity

Raven's Progressive Matrices. The nonverbal intelligence tests developed by Raven (1956, 1958) were readministered to all children to determine whether any systematic or class-wide changes in intelligence had taken place for the children in the Experimental Class in comparison with the Controls. Sets A, AB, and B of the Coloured Progressive Matrices (1956) were used with the Grade III children while sets B and C of the Standard Progressive Matrices test (1958) were used with the Grade IV children.

Lorge-Thorndike Intelligence Test. The Level 2, Form A, Primary Battery was administered to the Grade III children and the Level 3, Form A, Primary Battery to the Grade IV children. The Grade III form of this standardized test consists of three parts: picture vocabulary, recognizing which of a group of pictured objects does not belong, and recognizing which two of a group of pictured objects go together. The form used at the Grade IV level consisted of four parts: sentence completion, recognizing which of five words is similar to a given set of three (e.g., rose, daisy, violet:

red, garden, sweet, grow, lily), arithmetic problem solving, and recognizing which of five words is most similar in meaning to a given word (e.g., land: ground, town, roof, river, grass).

Creativity. The creativity tests consisted of two parts, both of which are thought to measure the S's flexibility or spontaneous inventiveness. In the first part, the subject is asked to name as many unusual uses as he can for two common objects selected from the following: a toothpick, a wire coat hanger, a roller skate, or a roll of scotch tape. In the second part of the test, he is asked to describe what the consequences would be if two of the following circumstances prevailed: if you were as small as a mouse, if you could breathe under water, if you were as light as a feather, or if reading and writing hadn't been invented.

The scoring was done as follows: (1) Responses similar in concept were grouped together, so that if a child said that with a wire coat hanger one can build a mobile as well as hang things from it, he received one point. (2) Responses that were nonsensical were not counted, nor were completely non-utilitarian or irrelevant responses. Generally speaking, very few of these responses occurred. (3) Any acceptable response given by less than one tenth the total number of subjects was awarded 2 points; all other more common responses

were given one point. Total scores were averaged over the number of items in that part of the test. A balanced order of presentation was used.

5. Sensitivity to Foreign Sounds

A modified version of the procedure developed by Davine, Tucker and Lambert (1970) to assess the comparative skills of monolinguals and bilinguals in perceiving phoneme sequences was again administered. Sequences were chosen so that six occurred in initial position in both English and French, /kl/ as in clap or clef, six in English but not French, /šr/ as in shroud, six in French but not English /ps/ as in psautier; and six neither in English nor French, /km/. Using this design, students listened to a tape recording of 24 ABC...X sound sequences (e.g., /fd/, /nd/, /bv/.../fd/), and were asked to indicate whether the last sound (X) was the same as A, B, or C.

The data were analyzed using a 3 x 4 analysis of variance design with repeated measures on the second factor. The two independent variables were type of instruction (Experimental, English or French); and type of stimulus (E+F+; E+F-; E-F+; E-F-). The dependent variable was the number of correct responses per pupil for each type of stimulus.

6. Attitude Development

Each of the children at the Grade III and IV level in

the Experimental and Control Classes was asked to give their personal reactions to four concepts: English Canadians, French Canadians, European French, and Myself, using 13 bipolar adjective rating scales (intelligent...stupid; strong ...weak; friendly...unfriendly; affectionate...not affectionate; industrious...lazy; kind...mean; happy...sad; humble... proud; possesses self-confidence...lack self-confidence; good looking...ugly; pleasant...unpleasant; calm...emotional; and talkative...non-talkative). These particular scales were selected as appropriate in light of previous research. The data were analyzed using separate one-way analyses of variance for each adjective scale for each of the four concepts.

Results

Again this year we present the test results for the Pilot Class now in Grade IV and for the Follow-up Class in Grade III. As we mentioned in last year's report, the atmosphere for the Follow-up Class is less experimental and more relaxed than that for the Pilot Class because the teachers have been able to profit from and improve on the previous year's teaching procedures. In addition the reliability of the results for the overall experiment is given a difficult test in this type of replication because changes occur from year to year in teachers and philosophies of teaching, as well as in our own

methods of evaluating the comparative standing of the classes.

A comparison of the progress of the two Grade III classes, (the Grade III class tested in 1970 and the Pilot Class tested in 1969 when they were in Grade III) can be made by examining the results from last year's Pilot Class (Lambert, Tucker, d'Anglejan and Segalowitz, 1970; Table 2) with those from this year's Follow-up Class (this report's Tables 1-6).

Results for the Grade III Follow-up Class, 1970.

The findings to be discussed here are presented in Table 1 where the average scores for the Experimental Follow-up Class and the English or French Control Classes are compared on each of the measures described earlier.

Insert Table 1 about here

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1. English Language Skills

The results from the various sections of the Metropolitan Achievement Test (items 1-5 in Table 1, entered in Standard Score form) suggest that the bilingually instructed pupils' knowledge of basic English skills is equivalent to that of their English Control counterparts. They perform as well as the English Controls in subtests of Word Knowledge, Word Discrimination, Reading, Spelling, and Word Usage. Only in the subtest which involves Punctuation and Capitalization

Table 1

Means and Adjusted Means for Grade III

	Experimental Class		Controls		F	
	Mean	Adjusted	Mean	Adjusted	Ratio	df
ENGLISH SKILLS						
1. Met. Wrd. Know.	56.93	57.80	55.87	55.11	1.96	1,50
2. Met. Wrd. Discrm.	55.19	56.44	56.74	55.65	0.13	1,50
3. Met. Reading	51.46	52.61	53.13	52.09	0.05	1,51
4. Met. Spelling	54.79	56.32	59.23	57.84	0.42	1,51
5. Met. Usage	58.96	58.65	59.65	59.92	0.15	1,50
6. Met. Punct.	46.48	48.10	54.84	53.43	5.94*	1,50
7. Eng. List. Comp.	12.89	12.59	14.64	14.89	8.05**	1,53
8. Eng. Peabody	49.20	48.98	48.69	48.90	0.00	1,54
9. Speaking Skills in English: Story Invention						
Word Counts						
No. of words	128.19	127.46	133.09	133.69	0.16	1,52
Nouns (% of total)	0.19	0.19	0.22	0.21	4.49*	1,52
Diff. nouns %	0.40	0.40	0.36	0.36	1.62	1,52

Table 1 (contd.)

	Experimental Class Mean	Experimental Class Adjusted	Controls Mean	Controls Adjusted	F Ratio	df
9. (contd.)						
Adjectives %	0.09	0.06	0.09	0.11	2.30	1,52
Diff. Adj. %	0.59	0.60	0.59	0.58	0.09	1,52
Verbs %	0.15	0.16	0.17	0.16	0.05	1,52
Diff. verbs %	0.68	0.69	0.68	0.67	0.13	1,52
Linguist's Ratings						
Eng. overall	3.19	3.24	3.15	3.11	0.19	1,52
Gram. Correct	3.22	3.38	3.09	2.96	1.93	1,52
Enunciation	2.85	2.97	2.88	2.78	0.38	1,52
Rhythm & Intonation	3.11	3.28	3.18	3.04	0.53	1,52
10. Decoding Skills						
Children's Descriptions	11.21	9.01	7.88	9.81	0.03	1,52
Adult's Descriptions	7.29	7.35	7.25	7.19	0.09	1,52
FRENCH SKILLS						
11. Fr. List. Comp.	11.19	11.32	15.19	14.96	20.23**	1,35
12. Fr. Peabody	49.20	49.64	51.06	50.24	0.09	1,38
13. Speaking Skills in French: Story Invention						
Word Counts						
Total words	86.07	86.04	146.22	146.32	3.17	1,29
Nouns %	0.16	0.16	0.17	0.17	0.57	1,29

Table 1 (contd.)

	Experimental Class Mean	Experimental Class Adjusted	Controls Mean	Controls Adjusted	F Ratio	df
13. (contd.)						
Diff. nouns %	0.76	0.76	0.73	0.72	0.38	1,29
Adjectives %	0.06	0.06	0.06	0.06	0.04	1,29
Diff. adj. %	0.67	0.67	0.63	0.63	0.13	1,29
Verbs %	0.17	0.17	0.19	0.18	1.47	1,29
Total words %	0.69	0.69	0.63	0.63	1.04	1,29
Linguist's Ratings						
Fr. grammar	3.05	3.00	4.20	4.30	10.28**	1,24
Overall	3.36	3.36	4.20	4.22	4.25*	1,24
Rhythm & Intonation	3.36	3.34	4.40	4.45	6.85*	1,24
Enunciation	4.09	4.11	4.40	4.36	0.43	1,24
Liaison	4.73	4.78	4.00	3.88	4.08	1,24
14. Decoding Skills						
Children's Descriptions	5.66	5.74	7.69	7.54	10.89**	1,37
Adult's Descriptions	7.14	7.29	8.13	7.86	1.21	1,37
ARITHMETIC SKILLS						
15. Met. Arith. Comp.	51.30	52.36	55.48	54.56	0.57	1,50
16. Met. Arith. Prob.	53.63	54.65	54.71	53.82	0.13	1,50
I.Q. & CREATIVITY						
17. Eng. Raven	28.93	29.35	27.78	27.41	1.92	1,52
Fr. Raven	28.93	29.12	30.19	29.85	0.28	1,36

Table 1 (contd.)

	Experimental Class Mean	Experimental Class Adjusted	Controls Mean	Controls Adjusted	F Ratio	df
18. Lorge Thorndike						
Total	54.38	54.96	53.15	52.64	2.86	1,54
Vocab.	19.97	20.00	18.94	18.91	2.76	1,54
Not-belong	17.45	17.55	18.12	18.03	0.27	1,54
Go-together	16.97	17.41	16.09	15.70	4.56*	1,54
19. Creativity						
Eng. unusual uses	4.56	5.09	6.33	5.90	0.75	1,52
Eng. consequences	5.93	6.33	7.64	7.31	1.51	1,52
Fr. unusual uses	8.30	9.06	4.67	2.38	2.31	1,28
Fr. consequences	7.15	7.30	8.56	8.11	0.24	1,28

* $p < .05$

** $p < .01$

(item 6) do they perform significantly below the English Controls. This finding replicates last year's results, and presumably reflects a difference between the French and English styles of punctuation and capitalization.

On the Listening Comprehension test (item 7), the Follow-up Group's performance is significantly poorer than that of the English Controls. Last year, there was no such difference. This result may reflect the lack of quiet testing rooms in the school which houses the Experimental Classes.

There was no significant difference in performance between the Experimental and English Control Classes on the Peabody Picture Vocabulary Test (item 8). This indicates that the range of English vocabulary acquired by the bilingually instructed children has not been restricted by the experimental program.

The children's spontaneous oral production was measured by the Story Invention task (item 9). The linguist who analyzed the taped-recordings of the pupils' speech perceived no significant differences between the Experimental and English Control Classes in their overall expression, grammatical correctness, enunciation, or rhythm and intonation. Likewise the formal word counts revealed only one statistically significant difference, out of the seven possible, between the two groups. The Experimental pupils used 2%

fewer nouns in their stories than the Controls. The analysis of the formal word counts as well as the linguist's ratings replicate exactly the pattern of results for Story Invention with last year's Pilot Class.

There were no significant differences between the Experimental and Control children on either the Children's or Adults' version of the Decoding Task (item 10). This finding that the children in the Experimental Class correctly process adult as well as peer group messages suggests that the difference between the two groups' performance on the Listening Comprehension test may, in fact, have been artifactual.

2. French Language Skills

The performance of the Follow-up Class on this year's Test de Rendement en Français will not be described in detail here since the city-wide norms used for comparison will not be developed until February, 1971. It is relevant to observe here, however, that they fell between the 60th and 77th percentile when tested in January of 1970. It is also interesting to note that when we administered this test to an English Control class of pupils who had been following a conventional "French as a Second Language" program (FSL), they were as a class unable to understand the instructions or to solve correctly the examples which preceded the test items. We do not

intend this observation as a criticism of existing FLS programs for they may have very different priorities in their aims and goals; but it is nevertheless the case that the bilingually instructed pupils experienced no particular difficulties with this test.

On the test of French Listening Comprehension (item 11), the Experimental pupils scored significantly lower than the French Controls which again may have been a function of the testing conditions. The conditions for testing the French Control pupils were ideal with small groups being tested in a quiet room.

There was no significant difference between the two groups on the French version of the Peabody Picture Vocabulary Test (item 12). This suggests that the range of French vocabulary acquired by the Experimental pupils approximates that of their French Control counterparts.

On the Story Invention task (item 13) which we used to assess spontaneous oral production, there were no signficant differences between the output of the Experimental and the French Control Classes on any of the formal word counts. With regard to the linguist's ratings, the findings were again similar to last year's: the French native speakers' control of French grammar, rhythm and intonation, and their overall expressive ability were rated significantly better than that

of the Experimental pupils who were nonetheless rated at or above the neutral point on each index. There were no significant differences between the two groups in their enunciation or use of liaison.

There was no significant difference between the Experimental and French Control Classes on the Decoding Task (item 14) which involved the Adults' Descriptions, although the Experimental Class was significantly poorer than the French Control Class when decoding Children's Descriptions. This result is interesting in that the adult voice on the tape was not that of the teacher, suggesting that the children have caught on to adult modes of verbal description. They have not had experience with children in French (except among themselves) and this lack of experience is apparently reflected in their relatively poorer performance with children's messages in the Decoding task.

3. Arithmetic Skills

Two separate indices were used to assess the arithmetic skills of the Follow-up Class. They performed as well as the English controls on both the Computation (item 15) and the Problem Solving (item 16) sections of the Metropolitan Achievement Test. This replicates last year's finding with the Pilot Class at the Grade III level. It is important to bear in mind when considering this finding that the bilingually

instructed children have received all of their formal mathematics instruction via French; but are here tested via English.

The Experimental pupils were also given the Test de Rendement en Calcul. The norms for this year's test will be available in February, 1971. In January, 1970 the Experimental Class fell between the 60th and 77th percentiles in their performance.

4. Intelligence and Creativity

The retesting with Raven's Progressive Matrices (item 17) revealed no significant differences among the Experimental, English Control, or French Control Classes. Likewise, there was no significant difference between the Experimental and English Control pupils on the Lorge-Thorndike total score (item 18). The Experimental pupils, however, performed significantly better on the subtest which assessed their ability to choose the items which "go-together." Furthermore, the Experimental pupils performed similarly to the English Controls and to the French Controls on both measures of "Creativity" (item 19). At this time, there is no evidence of any intellectual retardation or lag as a result of the Experimental pupils' intensive second language instruction.

5. Sensitivity to Foreign Sounds

The results of the Phoneme Discrimination test revealed

that there were significant differences between the three groups of pupils (F = 12.86; 2/99 df, $p < .01$) with the Experimental pupils performing similar, in general, to the English Control pupils and better than the French Controls. The Type of Sound was also a signficant source of variation (F = 3.41; 3/297 df, $p < .05$) with pupils, in general perceiving best those initial sound clusters which occur in both English and French, and poorest those which occur initially in English but not French. The results are summarized in Table 2.

Insert Table 2 about here

We predicted that there would be a significant interaction between the medium of instruction and the type of sound sequence comprising the stimulus; but, in fact, there was not (F = 0.89; 6/297 df). There is a difficulty in this analysis because the English Controls are known to have followed a FSL program since Grade I, and thus may have had enough experience with French sounds to make them an inappropriate comparison group. We plan now to compare the Experimental Class with genuine monolingual Control groups.

6. Attitudes Toward Selected Ethnolinguistic Groups

The Experimental, English Control and French Control

Table 2

Sensitivity to Foreign Sounds at Grade III Level

Type of Sound Sequence	Method of Instruction		
	English	French	Experimental
E+F+	3.65	1.91	3.44
E+F-	3.24	1.65	2.94
E-F+	3.59	1.91	3.15
E-F-	3.82	1.65	3.18

pupils rated the concepts: Myself, English Canadians, French Canadians, and European French on a series of 13 bipolar semantic differential-type rating scales. To establish a baseline for purposes of comparison, let's consider the pupils' responses to the concept, Myself (Table 3).

Insert Table 3 about here

There is a general consensus for 12 of the 13 scales that the pupils from the various groups view themselves relatively similarly. That is, all pupils, regardless of their method of classroom instruction or ethnolinguistic reference group, view themselves as relatively intelligent, strong, friendly, affectionate, industrious, kind, happy, humble, self-confident, pleasant, calm, and not overly talkative. They view themselves significantly differently with respect to only one trait: The French Control pupils view themselves as less good-looking than their Experimental or English Control counterparts. The overall similarity permits us to infer that this intensive method of learning via a second language has not affected the self-image of the Experimental pupils and furthermore permits us to pay close attention to differences among the groups' ratings on the remaining three concepts.

We find no such unanimity with regard to the pupils'

Table 3

Attitude Toward the Concept "Myself" by Grade III Pupils[4]

		Groups				
	Trait	Experimental	English Controls	French Controls	F	df
1.	intelligent...stupid	6.47	6.48	6.00	0.90	2,75
2.	strong...weak	6.30	5.77	5.82	0.87	2,75
3.	friendly...unfriendly	6.50	6.65	5.76	2.74	2,75
4.	affectionate...unaffectionate	5.83	5.48	6.24	0.83	2,75
5.	industrious...lazy	5.83	6.13	5.82	0.28	2,75
6.	kind...mean	6.13	6.58	6.35	1.32	2,75
7.	happy...sad	6.50	6.52	5.94	1.43	2,75
8.	humble...proud	5.37	4.32	5.47	1.86	2,75
9.	possesses self-confidence... lacks self-confidence	5.47	5.19	5.53	0.21	2,75
10.	good looking...ugly	6.40	6.35	5.41	3.14*	2,75
11.	pleasant...unpleasant	6.00	6.58	6.18	1.64	2,75
12.	calm...emotional	5.80	5.52	6.12	0.54	2,75
13.	talkative...non-talkative	4.50	4.55	3.29	1.55	2,75

reactions to the concept English Canadians (Table 4). Significant differences exist among the groups for ten of the 13 rating scales. The French Control pupils consistently rate the concept "English Canadians" less favorably than the Experimental or English Control Classes. Thus, compared to the Experimental and the English Control Classes, the French Control group at the Grade III level perceives "English Canadians" to be relatively stupid, unaffectionate, mean, unpleasant, lazy, ugly, emotional, as well as less strong, friendly, and happy. It is important to note that the members of the Experimental Class, in contrast, have a favorable view toward their own ethnolinguistic group.

Insert Table 4 about here

In similar fashion, there are significant differences among the three groups of pupils in their reactions to the concept French Canadians (Table 5) on all 13 rating scales. The French Controls view "French Canadians" more favorably than either the Experimental or English Control Classes. They perceive "French Canadians" to be more intelligent, strong, friendly, affectionate, industrious, kind, happy, humble, self-confident, good-looking, pleasant, calm, and less talkative than the pupils from the Experimental or English

Table 4

Attitude Toward the Concept "English Canadian" by Grade III Pupils

Trait	Groups: Experimental	English Controls	French Controls	F	df
1. intelligent...stupid	6.03	5.64	3.94	10.84**	2,77
2. strong...weak	5.77	5.24	4.47	3.79*	2,77
3. friendly...unfriendly	6.27	5.42	4.24	9.79**	2,77
4. affectionate...unaffectionate	5.53	5.39	3.18	10.08**	2,77
5. industrious...lazy	5.63	5.64	3.94	5.37**	2,77
6. kind...mean	6.33	5.82	3.88	13.80**	2,77
7. happy...sad	5.80	6.00	4.88	3.30*	2,77
8. humble...proud	5.57	4.73	4.29	2.52	2,77
9. possesses self-confidence... lacks self-confidence	4.67	4.79	4.29	0.33	2,77
10. good-looking...ugly	5.83	5.67	3.94	7.23**	2,77
11. pleasant...unpleasant	5.77	5.58	2.24	35.73**	2,77
12. calm...emotional	5.27	4.67	3.24	5.83**	2,77
13. talkative...non-talkative	5.63	5.39	5.65	0.18	2,77

Control Classes who have a generally less favorable view.

Insert Table 5 about here

Pupils from the three groups again respond relatively similarly to the concept European French (Table 6). There were no significant differences for 12 of the 13 traits, with the averages approaching the neutral value for each scale. The only significant difference occurred on the trait: Talkative...Non-talkative where the English Controls perceived the European French as most talkative while the French Controls saw them as least.

Insert Table 6 about here

The attitude data will be discussed in more detail after the results from the Grade IV Pilot Class have been presented.

Results for the Grade IV Pilot Class, 1970

The findings to be discussed in this section are presented in Table 7 where the average scores of the Experimental Pilot Class and the English and French Control Classes are compared on each of the various measures described earlier.

Insert Table 7 about here

Table 5

Attitude Toward the Concept "French Canadian" by Grade III Pupils

Trait	Groups: Experimental	English Controls	French Controls	F	df
1. intelligent...stupid	3.07	3.00	6.18	19.01**	2,77
2. strong...weak	3.03	3.24	5.65	10.90**	2,77
3. friendly...unfriendly	3.40	3.85	5.29	4.36*	2,77
4. affectionate...unaffectionate	3.90	3.82	5.59	4.30*	2,77
5. industrious...lazy	3.17	2.97	5.65	12.33**	2,77
6. kind...mean	4.37	3.45	6.12	12.32**	2,77
7. happy...sad	4.23	4.06	5.82	4.76*	2,77
8. humble...proud	3 67	3.94	5.47	4.81*	2,77
9. possesses self-confidence... lacks self-confidence	4.10	4.52	5.65	3.75*	2,77
10. good-looking...ugly	3.83	4.00	6.00	6.80*	2,77
11. pleasant...unpleasant	3.57	3.82	6.18	10.05**	2,77
12. calm...emotional	3.20	3.15	5.82	10.98**	2,77
13. talkative...non-talkative	4.67	5.24	3.12	5.03*	2,77

Table 6

Attitude Toward the Concept "European French" by Grade III Pupils

		Groups				
	Trait	Experimental	English Controls	French Controls	F	df
1.	intelligent...stupid	3.80	4.58	4.76	1.74	2,77
2.	strong...weak	4.10	4.82	4.53	1.18	2,77
3.	friendly...unfriendly	4.87	5.00	4.88	0.04	2,77
4.	affectionate...unaffectionate	4.17	4.58	5.06	1.07	2,77
5.	industrious...lazy	3.77	4.85	4.18	2.00	2,77
6.	kind...mean	4.03	5.09	4.88	2.01	2,77
7.	happy...sad	4.57	5.36	4.35	1.79	2,77
8.	humble...proud	4.17	4.12	3.65	0.33	2,77
9.	possesses self-confidence... lacks self-confidence	3.80	4.94	4.71	2.88	2,77
10.	good looking...ugly	4.07	4.97	3.82	2.29	2,77
11.	pleasant...unpleasant	4.27	5.42	4.47	2.88	2,77
12.	calm...emotional	3.97	4.48	4.06	0.57	2,77
13.	talkative...non-talkative	4.13	5.18 ——	3.88	3.27*	2,77

Table 7

Means and Adjusted Means for Grade IV

	Experimental Class Mean	Experimental Class Adjusted	Controls Mean	Controls Adjusted	F Ratio	df
ENGLISH SKILLS						
1. Met. Word Know.	63.32	63.40	60.74	60.69	1.29	1,41
2. Met. Wrd. Discrm.	60.11	60.48	58.42	58.19	0.82	1,41
3. Met. Reading	58.32	59.03	58.10	57.66	0.20	1,41
4. Met. Spelling	61.53	61.39	61.61	61.70	0.02	1,41
5. Met. Usage	63.68	63.88	64.48	64.36	0.04	1,41
6. Met. Punct.	54.26	54.71	57.48	57.21	0.87	1,41
7. Eng. List. Comp.	15.10	15.30	15.22	15.09	0.05	1,43
8. Eng. Peabody	36.55	36.93	34.19	33.95	2.22	1,43
9. Speaking Skills in English: Story Invention						
Word Counts						
No. of words	213.70	227.62	199.61	189.66	0.26	1,39
Nouns %	0.20	0.20	0.20	0.20	0.22	1,39
Diff. nouns %	0.34	0.34	0.37	0.37	1,52	1,39
Adjectives %	0.10	0.10	0.12	0.11	0.82	1,39

Table 7 (contd.)

	Experimental Class Mean	Experimental Class Adjusted	Controls Mean	Controls Adjusted	F Ratio	df
9. (contd.)						
Diff. adj. %	0.56	0.57	0.56	0.56	0.07	1,39
Verbs %	0.16	0.16	0.17	0.17	0.13	1,39
Diff. verbs %	0.61	0.59	0.66	0.68	5.80*	1,39
Linguist's Ratings						
Eng. overall	3.05	3.10	3.27	3.23	0.24	1,41
Gram. correct	3.30	3.35	3.43	3.40	0.03	1,41
Enunciation	3.00	3.07	3.03	2.99	0.08	1,41
Rhythm & Intonation	3.20	3.22	3.53	3.52	1.19	1,41
10. Decoding Skills						
Children's Descriptions	7.68	7.82	7.19	7.11	1.80	1,41
Adult's Descriptions	6.37	6.34	7.65	7.66	7.28**	1,41
FRENCH SKILLS						
11. Fr. List. Comp.	13.65	13.91	15.64	15.28	1.20	1,25
12. Fr. Peabody	38.30	38.87	46.79	45.97	3.84	1,25
13. Speaking Skills in French: Story Invention						
Word Counts						
Total words	105.16	95.39	83.69	97.97	0.02	1,23
Nouns %	0.16	0.16	0.17	0.16	0.00	1,23

Table 7 (contd.)

	Experimental Class Mean	Experimental Class Adjusted	Controls Mean	Controls Adjusted	F Ratio	df
13. (contd.)						
Diff. nouns %	0.78	0.80	0.70	0.66	4.26*	1,23
Adjectives %	0.05	0.06	0.06	0.05	0.18	1,23
Diff. adj. %	0.62	0.64	0.71	0.69	0.18	1,23
Verbs %	0.16	0.16	0.19	0.19	6.89*	1,23
Diff. verbs %	0.74	0.77	0.69	0.65	4.25*	1,23
Linguist's Ratings						
Fr. grammar	2.58	2.71	4.67	4.45	14.83**	1,22
Overall	3.05	2.94	4.00	4.19	8.06**	1,22
Rhythm & Intonation	3.37	3.42	4.92	4.84	16.37**	1,22
Enunciation	3.84	3.97	4.92	4.71	4.59*	1,22
Liaison	4.37	4.30	5.00	5.11	6.69*	1,22
14. Decoding Skills						
Children's Descriptions	6.21	6.36	9.00	8.80	8.64**	1,24
Adult's Descriptions	7.16	7.02	8.14	8.33	2.74	1,24
ARITHMETIC SKILLS						
15. Met. Arith. Comp.	64.79	66.00	66.16	65.42	0.03	1,41
16. Met. Arith. Prob.	61.16	61.99	60.84	60.33	0.34	1,41
I.Q. & CREATIVITY						
17. Eng. Raven	14.58	14.50	16.81	16.86	4.03*	1,41
Fr. Raven	14.58	14.47	15.50	15.65	0.38	1,24

Table 7 (contd.)

	Experimental Class Mean	Experimental Class Adjusted	Controls Mean	Controls Adjusted	F Ratio	df
18. Lorge Thorndike						
Total	61.89	63.32	56.83	55.89	2.48	1,39
Vocabulary	16.74	17.23	15.34	15.02	2.82	1,39
Not-belong	16.79	17.16	16.14	15.89	0.73	1,39
Math	12.16	12.48	9.79	9.58	7.10*	1,39
Analogies	16.21	16.45	15.55	15.39	0.55	1,39
19. Creativity						
Eng. unusual uses	6.95	7.60	7.71	7.25	0.05	1,39
Eng. consequences	7.35	7.74	8.79	8.51	0.50	1,39
Fr. unusual uses	6.58	5.95	5.15	6.08	0.01	1,23
Fr. consequences	7.79	7.22	8.00	8.83	0.56	1,23

* $p < .05$
** $p < .01$

1. English Language Skills

The results from the various sections of the Metropolitan Achievement Test (items 1-6 in Table 7, entered in Standard Score form) indicate that the Experimental pupils perform as well as the conventionally instructed English Controls on all measures: Word Knowledge, Word Discrimination, Reading, Spelling, Usage, and Punctuation.

Furthermore they perform similarly to the English Controls on the Listening Comprehension test (item 7), and the Peabody Picture Vocabulary Test (item 8).

The spontaneous oral production of the Experimental and English Control Classes was compared using the Story Invention task (item 9). The linguist who judged the pupils' extemporaneous creations noted no significant differences between Experimental and Control pupils in terms of overall expression, grammatical correctness, enunciation or rhythm and intonation. Likewise the formal word counts revealed only one statistically significant difference out of seven possible between the two groups: The Experimental Class had a relatively smaller proportion of different verbs than the English Controls. They were similar, however, in the overall proportion of nouns, adjectives and verbs used to tell their stories.

On the Decoding Task (item 10) the Experimental Class

performed similarly to the English Controls when the stimuli were children's descriptions; but significantly less well when they were adults' descriptions. This latter finding seems inconsistent with the performance by the Experimental Class on the Listening Comprehension and Picture Vocabulary tests and since no such pattern appeared in this group at the Grade III level no special importance will be attached to it.

2. French Language Skills

As mentioned earlier, the performance of the Pilot Class on the Test de Rendement en Français cannot be given until the city-wide norms are available in February, 1971. However, in January, 1970 their performance was equivalent to or better than 77% of the French children who were tested last year. On the test of Listening Comprehension (item 11), there was no significant difference in performance between the Experimental and French Control Classes. Likewise, the Experimental Class performed as well as the French Controls on the French version of the Peabody Picture Vocabulary Test (item 12). This finding is of interest to us, since at the Grade I to III level, the Pilot Class was regularly below the French Controls to the extent of an average of 7 or so vocabulary items. This year we see both the Pilot Class at Grade IV and the Follow-up at Grade III showing the same vocabulary

and conceptual development as the French-speaking Controls.

The linguist's rating of the Experimental children's spontaneous oral production (Story Retelling, item 13) revealed that they have not achieved native-like control of spoken French by the end of Grade IV. The French Controls were rated significantly higher on each of the five indices: grammatical correctness, overall expression, enunciation, liaison, and rhythm and intonation. Note, however, that the skills of the Experimental children were rated at or above the neutral point (2.5-3.5) for all indices, suggesting that they have achieved a very good command of the French language. The results of the word count analyses reveal no basic differences between the Experimental and French Control children. Their spontaneous productions are statistically similar in terms of length, percentage of nouns, percentage of adjectives, as well as the percentage of different adjectives. The Experimental Class uses a significantly greater variety of nouns and verbs than the French Controls while they, in turn, use a greater percentage of verbs. In summary, these data suggest that the oral productions of the Experimental children, although recognizably non-native, still approximate relatively closely the norms of spontaneous classroom language used by Grade IV French children. The Experimental children, however, tend to avoid complex

grammatical constructions favoring correct but simple structures.

The Experimental Class performed similarly to the French Controls on the Decoding Task (item 14) when this involved interpreting adults' descriptions, but they scored significantly lower when the task dealt with children's descriptions. Given their relatively good performance on the French Listening Comprehension and Peabody Picture Vocabulary Test, no special importance will be attributed to this difference. It reflects the fact that their major (and perhaps only) contact with French is through their teachers and the social interaction they have among themselves in French. Their peer contacts however are almost exclusively with other English-speaking youngsters.

3. Arithmetic Skills

The Experimental pupils' arithmetic skills were assessed using two subtests of the Metropolitan Achievement Test and the Test de Rendement en Calcul developed by the CECM. There were no significant differences on the Metropolitan Test of Computational Skills (item 15) or the test of Problem Solving (item 16). This finding is extremely interesting because the bilingually instructed pupils have so far received all their mathematics instruction via French and these tests are in English.

The Experimental Class was also given the Test de Rendement en Calcul and these results will be summarized in February, 1971 after the CECM norms have been compiled. In January, 1970 they performed as well as or better than 60-77% of the French pupils in Greater Montreal who were tested.

4. Intelligence and Creativity

All classes were administered the Standard Form of Raven's Progressive Matrices (item 17) which is similar to the Coloured form (Raven, 1956) but more appropriate for use with Grade IV pupils. The Experimental pupils performed as well as the French Control Class, but significantly lower than the English Control Class. This information, however, must be cautiously interpreted together with the finding that they performed similarly to the English Controls on the Lorge-Thorndike test (item 18). In fact, the Experimental pupils performed significantly better than the English Controls on the Mathematics section of this latter test. Their relatively poor showing on the Raven test therefore must be seen in conjunction with their comparatively good performance on the Lorge-Thorndike test. The latter test has been introduced in the past two Spring testing sessions because of its advantages (verbal and nonverbal subsections) and because the Raven test has now been readministered to all classes (Experimental and Controls) five times, and its effectiveness

as a measure of intellectual level or of change in level becomes progressively more questionable, even though we feel it is the best available measure to equate different language or ethnic groups at the start of a study such as this. Thus we attribute little importance to the difference in Raven scores found this year.

There were no significant differences among the Experimental and Control Classes on either of the measures of Creativity (item 19). The bilingually instructed pupils performed as well as the English Controls in English, and as the French Controls in French. In last year's report we mentioned that the Experimental children scored reliably higher on the creativity measures, but since we have no replication of that tendency this year for either the Pilot or Follow-up Classes, we will assume the advantage seen last year was a chance affair only.

5. Sensitivity to Foreign Sounds

The ability of the Grade IV students to perceive correctly initial sound clusters was examined using a variation of the procedure developed by Davine, Tucker and Lambert (1970). The analysis (see Table 8) revealed a significant main effect for Method of Instruction ($F = 5.23$; 2/81 df, $p < .01$) with the Experimental Class performing relatively better than the French Controls, but poorer than the English Controls.

Insert Table 8 about here

The Type of Sound also affected performance significantly (F = 9.51; 3/243 df, $p < .01$) with students generally perceiving best the sequences which occur in French, but not English; then those found in both English and French; neither in French nor English; and least well those which occur in English but not French.

There was no significant interaction between Method of Instruction and Type of Sound (F = 1.05; 6/243 df). If this program of bilingual instruction had resulted in an improved and generalized ability to perceive sounds which occur in other languages, there would have been a significant interaction reflecting a better performance for the Experimental children especially on sounds not found in English or French. Since we have not had any reliable indication of this sort in this report or in earlier ones, we now see a need to explore other aspects than sensitivity to the sounds of unknown languages. Perhaps the Experimental pupils would have developed generalized skills with syntax or semantics and we plan to examine these possibilities as well as sound sensitivity in future testing sessions.

Table 8

Sensitivity to Foreign Sounds at Grade IV Level

Type of Sound Sequence	Method of Instruction		
	English	French	Experimental
E+F+	3.75	2.18	2.57
E+F-	3.00	1.71	2.18
E-F+	3.68	2.32	3.07
E-F-	3.50	2.14	2.21

6. Attitudes Toward Selected Ethnolinguistic Groups

The attitudes of the Grade IV pupils were assessed by asking them to give their personal reactions to the four concepts: Myself, English Canadians, French Canadians, and European French, using 13 semantic differential-type rating scales.

For the concept Myself (Table 9), there were no significant differences among the three groups in their ratings on 12 of the 13 traits. They all saw themselves as relatively intelligent, strong, friendly, affectionate, industrious, kind, happy, humble, self-confident, good-looking, pleasant and calm. The only significant difference occurred on the trait: Talkative...Non-talkative where the French Controls viewed themselves as being less talkative than do the English Control or the Experimental Classes. This unanimity suggests that the self-image of the bilingually instructed pupils has not suffered in any way as a result of their educational program.

Insert Table 9 about here

In similar fashion, there is an almost perfect consensus among the groups concerning their perception of English Canadians (Table 10). The Experimental and both Control

Table 9

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Attitude Toward the Concept "Myself" by Grade IV Pupils

	Trait	Groups: Experimental	English Controls	French Controls	F	df
1.	intelligent...stupid	6.55	5.94	6.33	1.18	2,63
2.	strong...weak	6.00	5.65	5.47	0.38	2,63
3.	friendly...unfriendly	6.55	6.35	5.87	1.13	2,63
4.	affectionate...unaffectionate	6.00	6.16	5.53	0.80	2,63
5.	industrious...lazy	5.70	5.81	6.07	0.17	2,63
6.	kind...mean	6.60	6.13	6.13	0.76	2,63
7.	happy...sad	6.15	6.35	6.73	0.72	2,63
8.	humble...proud	5.65	4.29	5.80	2.94	2,63
9.	possesses self-confidence... lacks self-confidence	5.70	5.71	5.27	0.32	2,63
10.	good-looking...ugly	6.55	6.06	6.07	0.68	2,63
11.	pleasant...unpleasant	6.35	5.90	5.73	0.75	2,63
12.	calm...emotional	5.65	5.29	4.93	0.40	2,63
13.	talkative...non-talkative	4.70	4.35	2.53	4.11*	2,63

groups of pupils view English Canadians as essentially intelligent, strong, friendly, affectionate, industrious, kind, happy, humble, self-confident, pleasant and calm. Significant differences did occur for two traits: Good-looking... Ugly and Talkative...Non-talkative with the French Controls rating the "English Canadians" as less good-looking and more talkative than did the Experimental Class or the English Controls.

Insert Table 10 about here

Unanimity does not characterize the pupils' reactions, however, to the concept French Canadians (Table 11) where significant differences were obtained for 11 of the 13 traits. The French Controls consistently rated "French Canadians" more favorably than did either the English Canadian Controls or the Experimental pupils. Both of the English Canadian groups were relatively caustic in their reactions, viewing "French Canadians" as relatively stupid, weak, unfriendly, lazy, mean, sad, proud, non-confident, ugly, unpleasant and emotional. This contrasts with the pattern of the French Controls who saw their own group in a much more favorable light. There were no significant differences among the three groups on the traits: Affectionate...Not affectionate and

Table 10

Attitude Toward the Concept "English Canadian" by Grade IV Pupils

	Trait	Groups: Experimental	English Controls	French Controls	F	df
1.	intelligent...stupid	5.70	5.68	5.07	0.72	2,63
2.	strong...weak	5.50	5.32	4.73	1.00	2,63
3.	friendly...unfriendly	5.90	5.45	4.87	1.77	2,63
4.	affectionate...unaffectionate	5.40	5.29	4.40	1.78	2,63
5.	industrious...lazy	5.10	5.35	4.80	0.39	2,63
6.	kind...mean	5.60	5.48	5.40	0.09	2,63
7.	happy...sad	5.95	5.39	5.40	0.83	2,63
8.	humble...proud	5.00	4.90	5.00	0.02	2,63
9.	possesses self-confidence... lacks self-confidence	4.60	4.74	4.73	0.04	2,63
10.	good-looking...ugly	6.35	6.00	4.07	13.06**	2,63
11.	pleasant...unpleasant	5.90	5.19	4.87	1.33	2,63
12.	calm...emotional	4.60	4.68	4.20	0.30	2,63
13.	talkative...non-talkative	5.40	5.58	3.60	5.47**	2,63

Talkative...Non-talkative. Ratings in these two cases were essentially neutral.

Insert Table 11 about here

The ratings of the pupils in the Experimental and Control Classes were markedly similar for the concept European French (Table 12). There were no significant differences among the three groups on 12 of the 13 traits: the "European French" were perceived in an essentially neutral fashion on the various traits. There was only one significant difference: the French Controls considered the "European French" to be kinder than did the Experimental or English Control pupils.

Insert Table 12 about here

Several summary statements can be made about the attitude data. This year there is no indication, as there was last year, of a moderation in the attitudes of the Experimental pupils toward French Canadians or European French. At both the Grade III and IV levels we note that the profiles of the Experimental Class are substantially similar to those of the English Control Class. Last year's finding of a pattern of moderation in the attitudes of the same Experimental

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Table 11

Attitude Toward the Concept "French Canadian" by Grade IV Pupils

	Trait	Groups: Experimental	English Controls	French Controls	F	df
1.	intelligent...stupid	2.50	3.87	5.47	9.37**	2,63
2.	strong...weak	3.50	3.45	6.00	9.25**	2,63
3.	friendly...unfriendly	2.65	3.13	5.87	12.76**	2,63
4.	affectionate...unaffectionate	3.15	3.74	4.87	3.10	2,63
5.	industrious...lazy	2.65	3.42	6.07	16.76**	2,63
6.	kind...mean	3.55	3.48	5.47	5.63**	2,63
7.	happy...sad	3.80	3.61	5.80	6.40**	2,63
8.	humble...proud	3.25	4.19	5.60	5.65**	2,63
9.	possesses self-confidence... lacks self-confidence	3.50	4.39	5.60	5.09**	2,63
10.	good-looking...ugly	3.30	3.39	5.93	9.00**	2,63
11.	pleasant...unpleasant	3.50	3.71	5.87	6.81**	2,63
12.	calm...emotional	2.95	3.52	5.27	6.61**	2,63
13.	talkative...non-talkative	4.90	4.90	3.87	1.05	2,63

Table 12

Attitude Toward the Concept "European French" by Grade IV Pupils

	Trait	Groups: Experimental	English Controls	French Controls	F	df
1.	intelligent...stupid	3.60	4.13	4.27	0.54	2,63
2.	strong...weak	4.40	3.87	4.67	0.81	2,63
3.	friendly...unfriendly	4.25	4.06	4.80	0.65	2,63
4.	affectionate...unaff[illegible]	4.65	4.13	4.87	0.90	2,63
5.	industrious...lazy	3.85	3.74	4.60	0.92	2,63
6.	kind...mean	4.30	3.94 —— 5.80		5.00**	2,63
7.	happy...sad	4.55	4.26	4.87	0.51	2,63
8.	humble...proud	3.95	4.84	4.87	1.53	2,63
9.	possesses self-confidence... lacks self-confidence	4.25	4.42	4.53	0.12	2,63
10.	good-looking...ugly	4.10	4.19	4.93	0.90	2,63
11.	pleasant...unpleasant	4.60	4.29	4.93	0.67	2,63
12.	calm...emotional	4.30	4.23	4.67	0.27	2,63
13.	talkative...non-talkative	4.60	4.42	3.33	1.74	2,63

children at the Grade II and III levels (i.e., seeing one's own group and other groups as essentially similar in contrast to the Control pupils' tendency to favor their own group relative to other groups) was a statistically reliable one (see Reynolds, Wargny and Lambert, 1970), and the difference from last year to this suggests to us that changes taking place in the youngsters themselves and in the social environment may have contributed to the year-to-year variation noted. What might these influences be? Our answers to this question will, of course, only be speculative; but they can be regarded as important hypotheses for follow-up studies.

First, the pattern noted this year with both Pilot and Follow-up Experimental groups can be regarded as a reaction of "perfectly normal" nine or ten-year olds, that is, attitudinal reactions much like those of English-speaking pupils attending conventional schools. Their very favorable self-conceptions show no ambiguity, their equally favorable view of their "own" group reflects as much pride as does that of the English Controls, and their attitude toward French Canadians and European French people are essentially the same as those of the English Controls. One might speculate that, in light of their training through French, they would feel a particularly strong psychological press to create an identity, but since they are not different from the English

or French Controls in this regard, one wonders if they do experience any inordinate urge to search out an identity. A more plausible alternative is that these children strive to seek out and remain close to the norm of their own peer group with regard to feelings toward own-group and other-groups, rather than to present a relatively anti-English Canadian outlook or place French people in any special light. Might such a desire to seek out the peer group attitudinal norm be more prominent in 1970 than in 1969? Many very recent events suggest that this may be so, and we will discuss that possibility shortly. It is noteworthy that the French Control youngsters are comparatively most interesting in their attitudes this year: although the Grade III French Controls are hostile to English Canadians (Table 4), the Grade IV French Controls are essentially as favorable toward English Canadians as are the Experimental or English Control groups at the Grade IV level, making these youngsters particularly charitable in their attitudes.

What environmental events might have contributed to this year's profile of other-group attitudes of the Experimental and English Control groups? We find both groups at both grade levels expressing a generally neutral to slightly favorable attitude toward European French, neither group differing in their views from those of the French Controls

(Tables 6 and 12) at the same time as both groups at both grade levels express relatively unfavorable opinions about French Canadians. We noted earlier research on attitudes of adults in the Quebec area has also uncovered the same invidious comparison (see Lambert, 1967; Lambert, Frankel and Tucker, 1966). The fact that it shows itself at this young age and appears slightly exaggerated for the Experimental Pilot Class calls for comment.

One might imagine that a conscious attempt has been made to bias the program along these lines through the selection of teachers and educational materials, but this is definitely not the case. The educational scheme is to develop competence with both Canadian and European dialects of French by having teachers from Europe as well as from Canada, and to make certain that the texts used represent both cultural centers of French. Two other factors suggest themselves as more likely explanations: 1) the Experimental children's limited experience with representative samples of French Canadian young people; and 2) the current tensions between English and French-speaking residents of Montreal.

In last year's report, we mentioned that the St. Lambert Elementary School has a distinctive subgroup of pupils who are French-speaking but non-Catholic in faith. Thus, they are provided schooling in this large, central elementary

school within the Protestant School Board. It happens that these children come from generally lower social class backgrounds than do the English-speaking pupils and they also, as a group, have a generally lower level of school achievement. Thus, their reputation among the other children and the teachers is one of a distinct subgroup academically and culturally behind. If these are the only French Canadian youngsters the Experimental Classes come in regular contact with, then this limited social contact with an unrepresentative sample of French Canadians could easily bias the children's attitudes. There is no simple solution to this problem although for purposes of experimental control we did not mix French Protestant students with either the Pilot or Follow-up Classes. To do so -- necessary as this is for the educational progress of the underprivileged children -- can have unhappy consequences on the stereotypes the others hold about them. Getting to know others well through intimate contact need not generate respect and affection, especially when there is a strong likelihood that the negative stereotypes concerning the lack of intelligence of French Canadians, could with this sample, be confirmed through personal experience.

Still solutions can be worked out by the community and the school. As a basis for possible solutions, we are now planning an intensive survey with the Experimental children

to determine in detail what opportunities they have to use their French skills in social situations and how they regard the French people from Canada and France that they have learned about either at school or through personal contacts.

The tension between English and French Canadians in Montreal has become progressively more hostile over the past ten years (see Lambert, 1970), and one should not be surprised to learn that adults' suspicions of the other group filter down to children. Many incidents in recent years have contributed to suspicions and fear of French Canadians in the minds of English Canadians. For example, bombs have been placed in mail boxes, homes and businesses in the English-speaking areas of the city; ever louder demands for French unilingualism have been heard, especially prominent in the political campaigns of all provincial parties in the Spring elections of 1970; demands have led to demonstrations to make McGill a French-language university, and the provincial government is reluctant to allow immigrant families to have their children schooled in English.

Social tension, it should be recognized, is a typical characteristic of settings where there is the greatest need for programs such as this, which promise to promote bilingualism, and it is reassuring to realize that children, as in our experiment, can progress so well in learning the other group's

language in spite of the social climate.

In our view, these children have been given the opportunity to become as French and as Québecois as any French-speaking youngster at the same time as they can be equally English Canadian in language and outlook. For so many in the province, the future of French in Quebec and in Canada is a matter of highest priority, almost one of desperation. Those who examine this matter carefully are often disillusioned. For instance, V. Prince sums up his views as follows:

"Avec l'industrialisation, l'urbanisation, la télévision, la communication par satellites, aucune minorité ne peut vivre isolée comme autrefois, à moins de se cantonner dans les reserves. Il lui faut, si elle veut préserver son identité, se doter de moyens bien supérieurs à ceux dont elle disposait jusqu'ici.

Est-il encore possible de renverser la vapeur? Les froides statistiques démographiques apportent une réponse nettement négative. Mais ces statistiques ne tiennent pas complètement compte de l'élément humain. Il y a, par example, dans diverses régions du pays, un facteur nouveau depuis quelques années: l'éveil de la jeunesse. Ceci se vérifie, notamment, au Manitoba, en Ontario et au Nouveau-Brunswick. Les jeunes, plus scolarisés, ne laissent plus aux élites traditionnelles le soin de défendre seules la cause du français.

Ils bousculent même leurs aînés. Robert Maheu a tenu compte dans ses projections, de l'adoucissement récent des lois scolaires de plusiers provinces. Nous nous demandons pourtant s'il en a suffisamment soupesé les conséquences.

Il y a aussi un autre phénomène qui n'est peut-être pas aussi important mais qu'il est probablement à propos de souligner quand même: l'intérêt plus marqué d'un certain nombre d'anglophones pour le français. Plusiers d'entre aux s'efforcent d'apprendre la seconde langue officialle du pays.[5]"

In our view, few if any other groups of anglophones will have shown as much interest in Quebec and in Canada as the children in this investigation who have become fully competent in French and in their case with little apparent effort or disruption.

Conclusions

We have now been following, as critical observers, these two separate Experimental groups of children, the Pilot and Follow-up Classes, since they began their formal schooling in September, 1966 (see report of 1967). We have attempted to evaluate their progress in their two languages and the intellectual and attitudinal effects on these pupils of this innovative approach to second language teaching.

Their education, to date, has been characterized in Kindergarten and Grade I by a "home-school language switch" with French as the primary medium of instruction. Since the introduction in Grade II of formal instruction in English Language Arts, the program can now perhaps be more appropriately referred to as a Bilingual Education program, although the major emphasis has clearly been given to French, the language less likely to be given support in the social and home environment of these young Canadians.

In our role as evaluators, we have compared the performance of the Experimental children on a variety of tasks using as controls or comparison classes monolingually instructed French and English youngsters of the same initial intellectual capacity and the same social class background. In particular, we have tried to evaluate their: 1) English language skills; 2) French language skills; 3) arithmetic skills; 4) intelligence and creativity; 5) sensitivity to foreign sounds; and 6) attitudes toward various ethnolinguistic groups, including their self-conceptions.

Thus far, after five (four) years, we are satisfied that this novel program of second language teaching has <u>not</u> resulted in any native language or subject matter (i.e., arithmetic) deficit. Nor does there appear to be any cognitive retardation attributable to participation in this program.

In summary, the Experimental pupils appear to be able to read, write, speak, understand, and use English as well as youngsters instructed via English in the conventional manner. In addition and at no cost they can also read, write, speak and understand French in a way that English pupils who follow a traditional FSL program never do. These children have already acquired a mastery of the basic elements of French phonology, morphology and syntax; and they have not developed the inhibition which so often characterizes the performance of the foreign or second language student. With additional experience in the spontaneous use of the French language in diverse settings, while maintaining progress with the more formal skills through a continuing program of bilingual instruction, there appears to be every indication that these children and others like them should continue to progress toward balanced bilingualism.

We would not yet classify the Experimental children as balanced bilinguals (bilinguals with roughly equivalent competence in their two languages) even though such a target is realistic and can be achieved, we believe, without generating intellectual deficits or cognitive handicaps of any kind. However, we feel that the school alone may not be able to provide sufficiently varied conditions for the acquisition of balanced verbal fluency. The continuing interaction of the

Experimental children in a basically English milieu makes the task of acquiring bilinguality especially difficult. This part of the program has been of interest to us, limited as the contact with French peers is, because it permits us to determine how effective this type of training program would be in other regions of Canada or in other national settings where little contact with the other ethno-linguistic group would be possible, even though a desire to learn the other language is strong. In the Montreal setting, however, opportunities certainly do exist for outside-school supplementation of speaking skills in French. This, of course, is a decision falling ultimately to parents who can if they choose create or take advantage of diverse available opportunities to enhance the French language experiences of their children. The educational program of these children has certainly provided them with the essential language building blocks to become balanced bilinguals.

We believe strongly that the goal of bilingualism can be most efficiently attained if the parallel goal of biculturalism or other-culture sensitivity is set up simultaneously. With this aim in mind, for the past two years, we have assessed the attitudinal changes attributable to this program of bilingual education. Again, we see no harmful attitudinal effects of this educational experiment; and we have reason

to believe that the Experimental pupils during the next few years can develop a sensitivity and a positive outlook toward members of both of Canada's major ethnolinguistic groups. Again, this positive affect will probably not result from the school experience per se; but rather will be an offshoot of the experiences made possible by this unique educational program. As a result of their newly acquired language skills, the pupils can now seek out and come into contact with an increasingly diverse sample of both English and French Canadians with a resultant broadening of ther sociocultural perspectives.

In summation, we have attempted to assess and to describe the results of an innovative approach to second language teaching. The results of this program, of certain interest for Canadian parents and educators, will also interest other North American school officials and researchers. In the United States, with the passage of the Bilingual Education Act, many programs have been developed in which Spanish, French, Portuguese, etc. are used together with English as media of instruction. We have been astounded to learn that, for the most part, these programs do not contain provisions for research or evaluation similar to our critical analyses of the program in Montreal.

We have been fortunate in the present research program

to be able to study longitudinally the continuing development of several groups of children. Similar long-term programs of evaluation must accompany any major educational innovation if they are to be of value. In this respect, the present research program may well serve as a helpful model. Needless to say such a program will never succeed without the full cooperation of parents, school officials, and evaluators which characterizes the present study.

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FOOTNOTES

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2. The linguistic ratings for the English Story Invention were done by Professor L. Bruce Barkman; for the French by Professor Irène V. Spilka, both of l'Université de Montréal.

3. Sample copies of these instruments may be obtained by writing directly to M. Guy Huot at the CECM, 3737 Sherbrooke est, Montréal.

4. Entries connected by a single line differ significantly ($p < .01$).

5. V. Prince. L'avenir du français au Canada et au Québec. Le Devoir, 30 Decembre, 1970, p. A-15.

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Supplement No. 1
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Cognitive and Attitudinal Consequences of Following the Curricula of the First Four Grades in a Second Language

French Language and Arithmetic Skills

Each year the CECM Bureau de l'Evaluation develops, pretests, revises, and administers a Test de Rendement en Français and a Test de Rendement en Calcul to all Montreal children in regular French schools. The tests are scored and norms are prepared to describe the performance of approximately 15,000 children at each grade level. As we mentioned in the main report, the Grades IV and V levels of the two tests were administered to the pupils in the Pilot and Follow-up Experimental Classes in November, 1970 to coincide with the yearly testing by the CECM.

The results for the Experimental Classes are shown in Table 1 where the Stanine scores, equivalent percentiles, and corrected raw scores obtained by the normative groups are summarized. The average scores for each Experimental group are indicated at the appropriate position. The pupils from the Pilot and the Follow-up Classes score at the Stanine 5 level on the French Language Arts as well as the Mathematics test. This indicates that they perform better than approximately one-half of the pupils tested at their grade level in the normative sample. These results strengthen the argument made earlier that children following the bilingual

program have mastered the basic French language skills, and that they are able to understand and assimilate mathematical principles and techniques taught exclusively via French.

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Table 1

Norms for Montreal French School System, 1970-71

Stanine	Cumulative Percentile	Grade IV (a) Français	Grade IV (a) Mathematiques	Grade V (b) Français	Grade V (b) Mathematiques
1	4	0- 8	0- 5	0- 4	0- 4
2	11	9-13	6-10	5-10	5-10
3	23	14-19	11-17	11-19	11-18
4	40	20-29	18-26	20-26	19-27
5	60	30-37*	27-35*	27-35*	28-36*
6	77	38-44	36-44	36-42	37-45
7	89	45-49	45-51	43-49	46-52
8	96	50-55	52-57	50-55	53-55
9	100	56-60	58-68	56-66	56-64
	$\bar{X}$ =	34.17	33.43	32.75	33.36
	M =	27	27	20	19

(a) The Pilot Experimental Class now in Grade V.

(b) The Follow-up Experimental Class now in Grade IV.

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